Benthic Total Maximum Daily Load Study for Accotink Creek

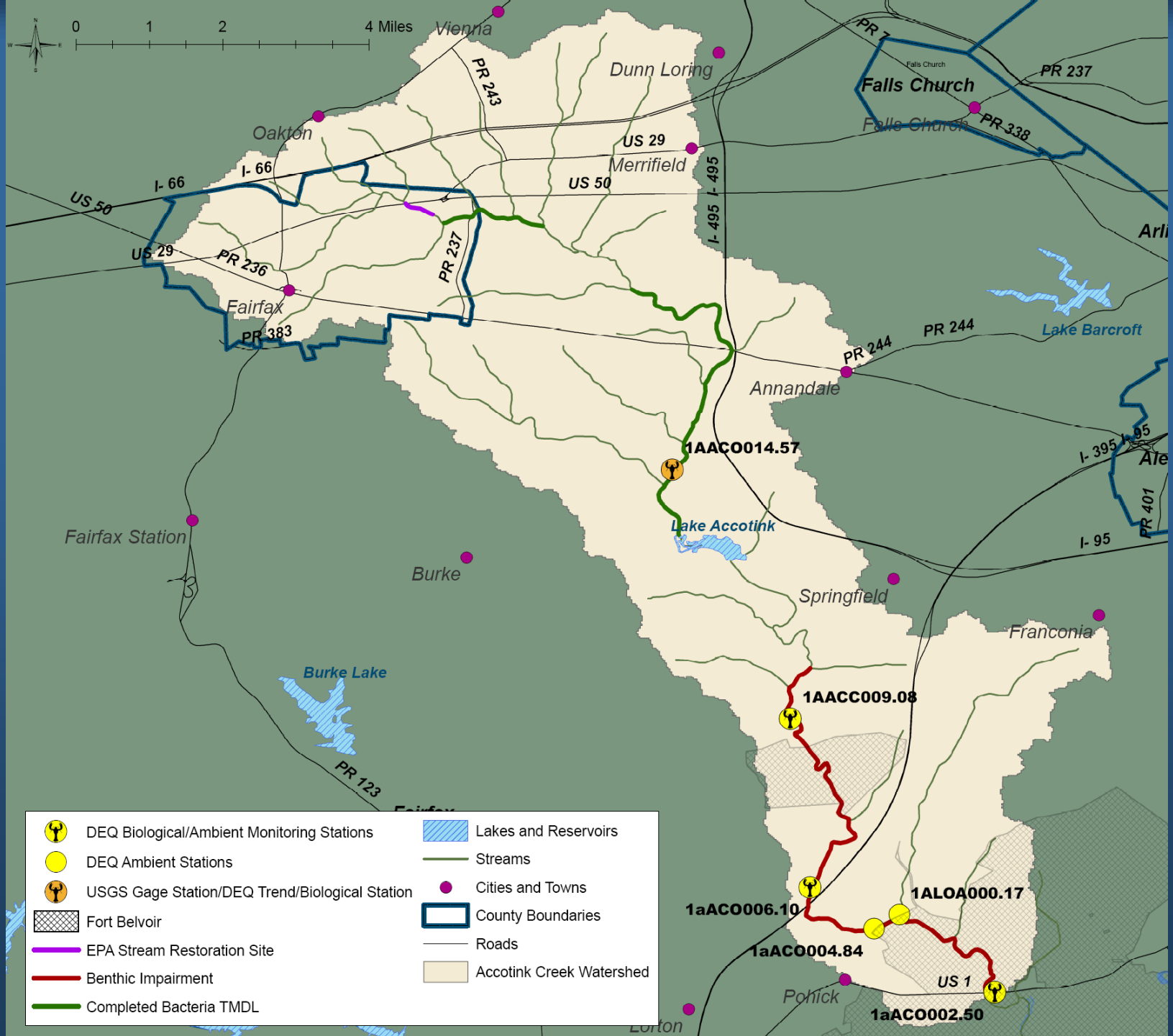
Technical Advisory Committee Meeting
December 15, 2008

Meeting Agenda

1:00 p.m.	**Welcome and Introductions** *Katie Conaway, VA DEQ*
1:05 p.m.	**Overview of TMDL Process** **Background on Accotink Creek Benthic Impairment and Stressor Analysis** *Katie Conaway, VA DEQ*
1:25 p.m.	**Overview of Stormwater TMDLs in Other Regions** *Helene Drago, US EPA, Region 3*
1:45 p.m.	**Proposed Technical Approaches for TMDL Development** *Raed El-Farhan, The Louis Berger Group*
2:15 p.m.	**Discussion and Questions**
3:00 p.m.	**Adjourn**

Project History

- TMDL Study initially began in July 2007
- December 2007 – Revised timeline for project completion
- Advisory Committee Meetings
- Project Kick Off – Technical Advisory Committee Meeting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DEQ Biological/Ambient Monitoring Stations
DEQ Ambient Stations
USGS Gage Station/DEQ Trend/Biological Station
Fort Belvoir
EPA Stream Restoration Site
Benthic Impairment
Completed Bacteria TMDL
Lakes and Reservoirs
Streams
Cities and Towns
County Boundaries
Roads
Accotink Creek Watershed

Aquatic Life Use Impairments on Accotink Creek

Impaired Use	Impairment Cause	Impairment Length	Year Impairment First Listed	Upstream Limit	Downstream Limit
Aquatic Life	Benthic Macroinvertebrates	7.35 miles	1996	Confluence with Calamo Branch	Start of the tidal waters of Accotink Bay
Aquatic Life	Benthic Macroinvertebrates	0.85 miles	2008*	Confluence of an unnamed tributary, located in the upstream corridor of Ranger Park	Confluence with Daniels Run

* 2008 Integrated Assessment will be final on December 22, 2008.

Aquatic Life Use: What are benthic macroinvertebrates?

Aquatic invertebrates that live on the bottom of streams, rivers, and other bodies of water.

Pollution Intolerant Invertebrates

Moderately Pollution Tolerant Invertebrates

Highly Pollution Tolerant Invertebrates

What happens when a water body doesn't meet water quality standards?

- **Waterbody is listed as "impaired" and placed on the 303(d) list.**
- **Impaired Waters require a Total Maximum Daily Load (TMDL) Study.**

TMDL = Sum of WLA + Sum of LA + MOS

TMDL = Total Maximum Daily Load
WLA = Waste Load Allocation (point sources)
LA = Load Allocation (nonpoint sources)
MOS = Margin of Safety

A TMDL is the total amount of a pollutant that a water body can receive, and still meet water quality standards.

Three Step TMDL Process in Virginia

1. **TMDL Development: Find the source of the pollutant and determine the reductions needed.**

2. **Implementation Plan Development: Identify conservation measures to fix the problem. Conservation measures are often called Best Management Practices or BMPs.**

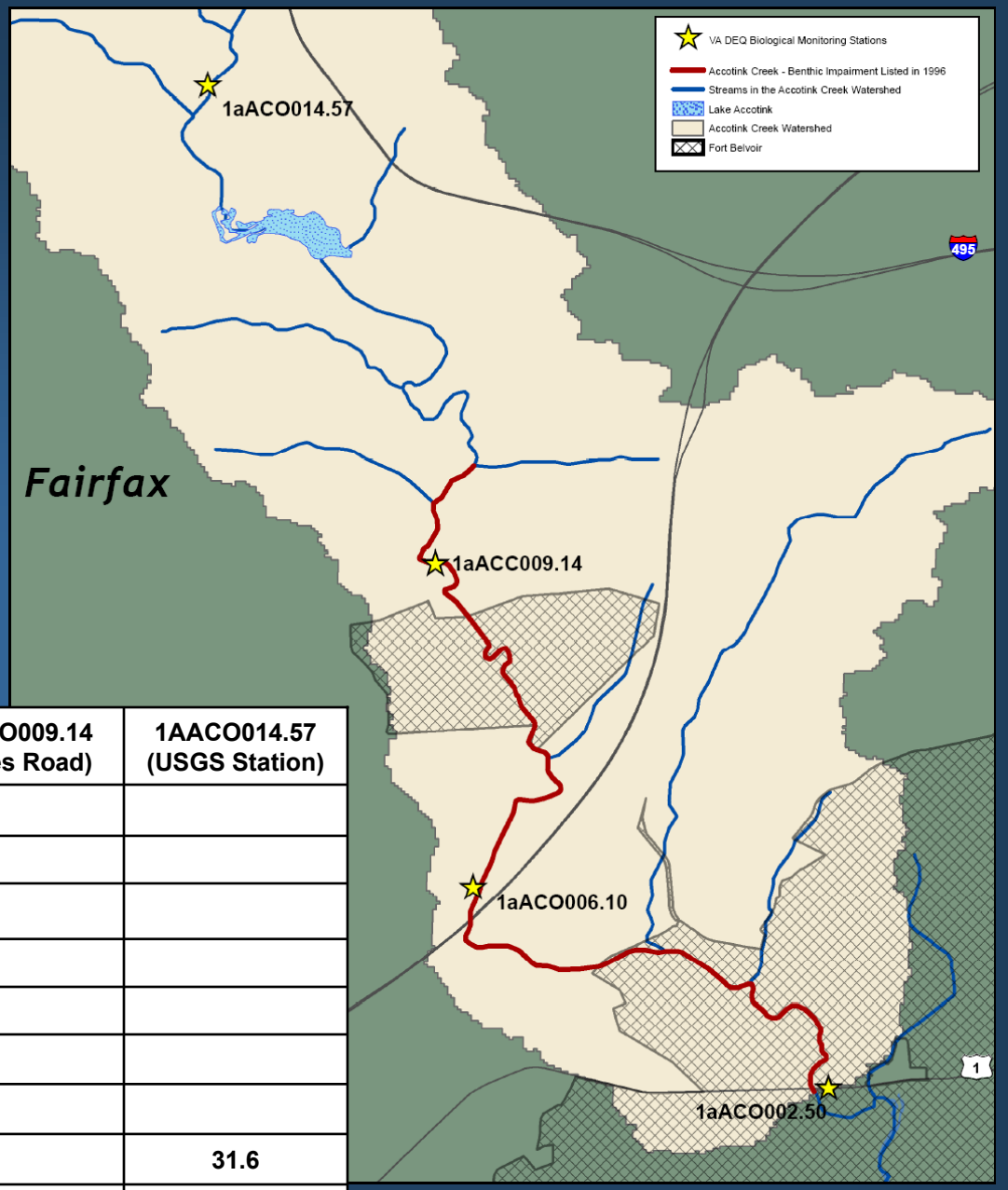
3. **Implementation: Implement the BMPs and sample to see improvement.**

Accotink Creek Aquatic Life Use Impairment and Stressor Analysis

VA DEQ Biological Monitoring

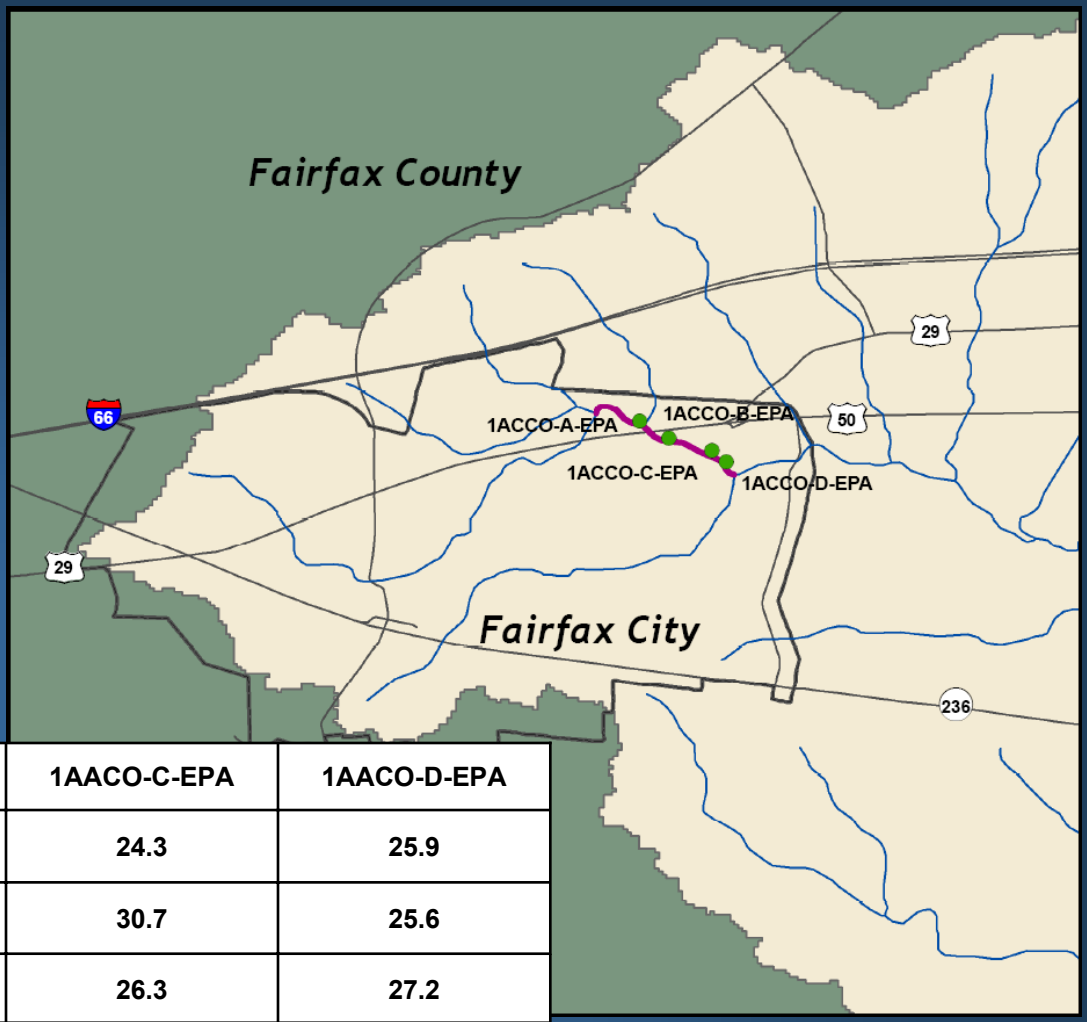
Stream Condition Index (SCI Scores) for Accotink Creek

Sample Date	1AACO002.50 (Route 1)	1AACO006.10 (Route 790)	1AACO009.14 (Hooes Road)	1AACO014.57 (USGS Station)
Fall 1994		38.3		
Spring 1995		38.9		
Fall 1995		30.6		
Spring 1996		38.2		
Fall 1996		28.3		
Spring 2006	35.3	24.3		
Fall 2006	26.6	41.9		
Spring 2007	33.5	36.6		31.6
Fall 2007	28.3	29.7		30.9
Spring 2008		25.7	22.8	



US EPA Biological Monitoring

Stream Condition Index (SCI Scores) for Accotink Creek



Sample Date	1AACO-A-EPA	1AACO-B-EPA	1AACO-C-EPA	1AACO-D-EPA
November 2005	21.2	29.1	24.3	25.9
December 2005	21.5	25.1	30.7	25.6
March 2006	25.2	23.9	26.3	27.2
September 2006	36.8	28.2	33.5	32.2
November 2006	29.6	26.6	28.4	24.8
May 2007	27.9	22.8	12.3	22.2
September 2007	32	30.5	22.5	31.7
November 2007	27.1	28.5	30.4	29.2

Benthic Stressor Identification

- What pollutant(s) is causing the impairment of the benthic community?
- Common stressors include:
  - Dissolved Oxygen
  - Nutrients
  - pH
  - Temperature
  - Sediment
  - Toxics

Data Used in Stressor Identification

Biological and Habitat Assessment Data

Relative Bed Stability Studies

Water Quality Data

a) Instream water quality data

Toxicity Testing

a) Acute toxicity testing
b) Chronic toxicity testing

Discharge Monitoring Reports (DMR)

Biologists field notes and observations

Accotink Creek Stressor Identification Summary

Non-Stressors:
pH
Temperature
Dissolved oxygen
Nutrients (Nitrogen and Phosphorus)
Instream Metals
Possible Stressors:
Toxicity
Metals and Organic Contaminants in Fish Tissue
Most Probable Stressors:
Urban Runoff and Sedimentation (Instream Erosion)

Accotink Creek Most Probable Stressor

High urban runoff leading to excessive instream erosion are considered to be the most probable stressors impacting the biological community in Accotink Creek.

Comments? Feedback?

- **Public Comment Period for this meeting extends from December 15, 2008 to January 20, 2009.**
- **All comments should be in writing. Please send them to:**

  Katie Conaway

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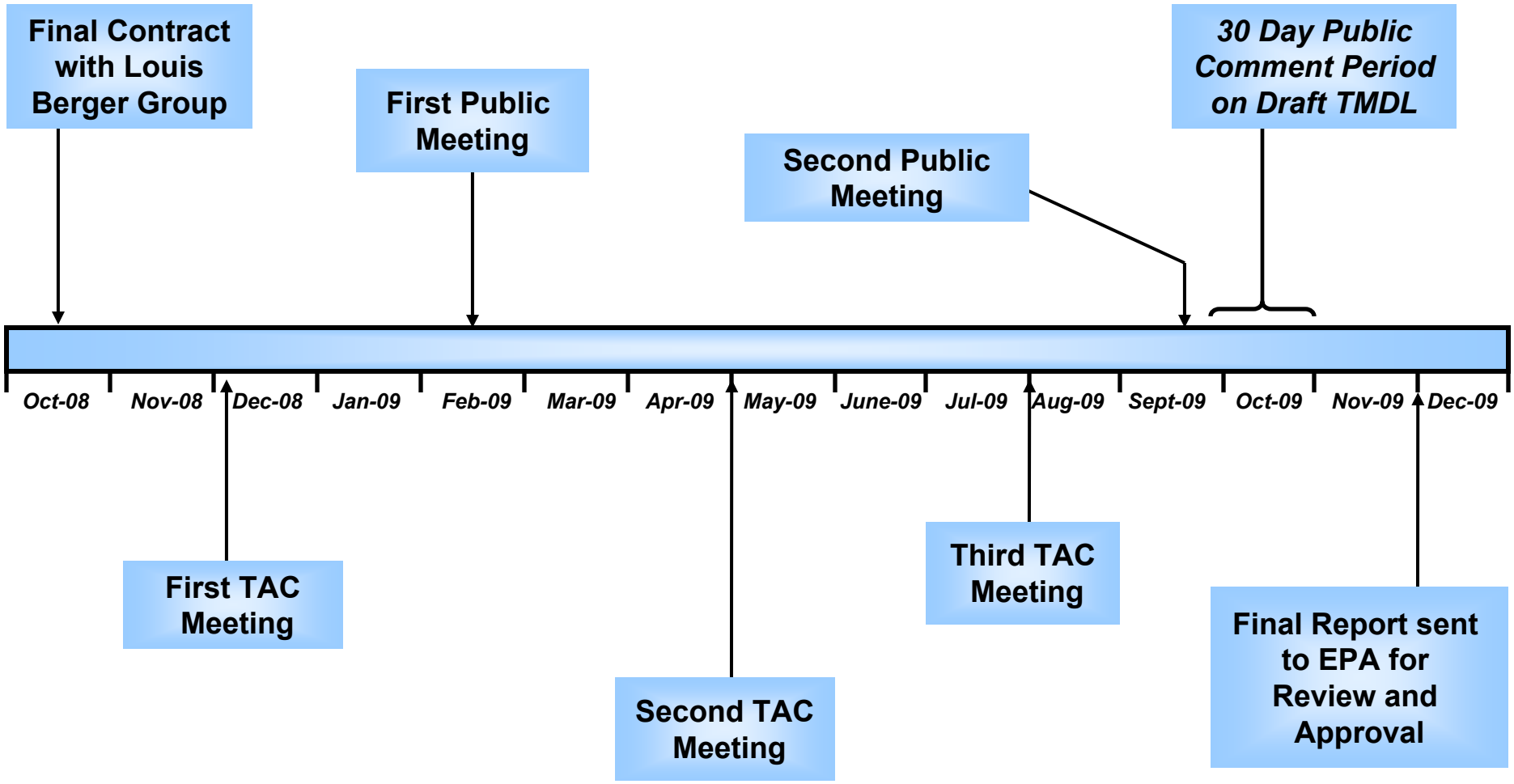
Accotink Creek Benthic TMDL
Project Milestones



** Schedule subject to change.*

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